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ABSTRACT

Single- and double-loop organizational learning are discussed in the context of higher education retrenchment. A model of the research university illuminates impediments to internal resource reallocation, program elimination, and integrative leadership, and suggests the need for alternatives to usual efforts to increase efficiency while retaining existing norms, goals, and organizational structures. It is suggested that if planning is done solely in terms of present images and structures, the planning may or may not be appropriate. If all that is needed is greater efficiency, then single-loop learning is feasible and adequate. Using existing images and norms for planning will not be useful in those cases in which the adaptive course of action requires changing the basic premises. There is also a larger context within which one can discuss both single- and double-loop learning. It is suggested that if one is in a position to consider various alternatives, it would not imply change for the sake of change, but might avoid hasty reaction to crisis. It is proposed that the university president has limited influence on the institution's research or educational missions. The ultimate test of an institution's responses to retrenchment is the achievement of equilibrium between its functional activities and the external environment. When there is equilibrium, single-loop organizational learning is sufficient but when an institution faces dilemmas, double-loop learning is needed for survival. A bibliography is appended. (SW)

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What Is the Problem of Retrenchment
in Higher Education?

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Retrenchment

ABSTRACT

Single- and double-loop organizational learning are discussed in the context of retrenchment in higher education. A model of the research university illuminates impediments to internal resource reallocation, program elimination, and integrative leadership, and suggests the need for alternatives to usual efforts to increase efficiency while retraining existing norms, goals, and organizational structures.

What Is the Problem of Retrenchment
in Higher Education?¹

The proper posing of a problem is usually at least half of its solution.² So it may be with retrenchment in higher education. Without pausing to reflect on just what the problem of retrenchment really is, we might be tempted, as James Carey³ put it, to walk back down the same staircase we walked up during the period of growth in higher education. We might, unreflectively, seek to follow a simple, and simple-minded, policy of last-in, first-out. Worse yet, we might achieve this result while purporting to make the decisions on the basis of other criteria for choice. Indeed, the term "retrenchment" already carries a heavy, and possibly misleading, connotation of what the problem of retrenchment is. The metaphor is a military one and calls to mind a redigging of the trenches closer to a citadel under siege. Thus, the metaphor militates against the creative, innovative actions urged by many as an appropriate response to the pressures on higher education. Paradoxically, a withdrawing to old ground descriptively characterizes how many institutions of higher education are, in fact, responding to a variety of pressures, most of them demanding immediate "solutions". The salient question is whether this response is ultimately in the institutional interest.

In an effort to answer this question, we would like to place the problem into the larger context of retrenchment in organizations in general.⁴ More specifically, in order not to beg the question by prespecifying a given environmental change as a question of "retrenchment," we want to conceive of the problem as one of how organizations adapt to a variety of environmental pressures. For this reason, we will examine organizational behavior and

organizational learning in an effort to find a fruitful way of posing the "problem of retrenchment."

Organizational learning

In their recent book, Organizational Learning: A Theory of Action Perspective, Argyris and Schon (1978) make the following perceptive comments of general applicability:

There has probably never been a time in our history when members, managers, and students of organizations were so united on the importance of organizational learning....

...organizational learning is not the same thing as individual learning... There are too many cases in which organizations know less than their members. There are even cases in which the organization cannot seem to learn what every member knows....

Just as individuals are the agents of organizational action, so they are the agents for organizational learning. Organizational learning occurs when individuals, acting from their images and maps, detect a match or mismatch of outcome to expectation which confirms or disconfirms organizational theory-in-use. In the case of disconfirmation, individuals move from error detection to error correction.

Argyris and Schon go on to define two related but distinctly different types of learning. "Single-loop" learning takes place if adaptive change (error-correction) can be instituted while permitting the organization to continue its present basic practices and to pursue its current objectives; the correction calls for a simple adjustment of organizational behavior within the range allowed by existing norms. But if the adjustment demands a modification of the organization's norms, underlying premises, and objectives, it calls for "double-loop" learning, a process of adaptation that places far greater demands on the participants. The challenge to any institution faced with any severe environmental pressure is to "learn" whether the situation calls for single-loop or double-loop learning. Clearly, the former assures greater continuity,

stability, and comfort whereas the latter holds greater risks, as well as, potentially, greater pay-offs.

Let us begin with some examples. Single-loop learning is part of the everyday life of any business firm in a competitive environment. Competing for a share of the market in a field in which the products of many suppliers are comparable - for example, home appliances, radios, TV sets, light bulbs - requires continuous single-loop learning. That is, each manufacturer uses this learning process in seeking new ways to improve production efficiency and to reduce distribution costs. As a result, many products have become throwaway items; it typically costs less to buy a new vacuum cleaner or radio than to repair a defective one. Another example of single-loop learning is the adoption of new printing technologies in the book-publishing business. It is not that adopting a new method of typesetting or offset printing is trivial or risk-free; it is single-loop learning when such a response to an unfriendly environment does not demand a change in corporate image, organizational structure, or marketing strategy. In these situations, increasing efficiency is an adequate response to the environmental challenge.

Double-loop learning calls for changing the norms, the structure, or the mission of an organization. A classic case is the transformation of Fisher Body, now a division of General Motors, from a carriage-making firm into a division of a large auto-manufacturing corporation. An interesting current example of double-loop learning is typified by the efforts of the Xerox Corporation, whose success has been based on the vast proliferation of office copiers, to become a leader in the paperless "office of the future"

technology. Another example is the entry of an oil company, Exxon, into the same field of computer-based office systems. The American Telephone and Telegraph Company calls attention to an ongoing transformation of corporate mission and image by advertising that it is in "the knowledge business."

Argyris and Schon are careful to point out that single- and double-loop learning overlap and represent a continuum; they are neither sharply distinct nor clearly separable. In many cases, both processes go on concurrently. What is important is to recognize that behavior considered rational in one mode of learning may be viewed as totally irrational in the other. As an example, for many years, Westinghouse Electric emulated its larger competitor General Electric as a manufacturer of a complete line of electrical products, from nuclear-powered generators to massive switchgear to lamp bulbs. "Everything in Electricity" was part of the accepted company strategy, despite the fact that some of the divisions were far less profitable than others; indeed, some were consistent losers. Under this strategy, the perceived task of the persistent losers was to minimize the loss; the successful divisions and the corporate management accepted these losses as a necessary adjunct of a valuable company image. When the decision was made to change the company strategy so that each division was assigned the responsibility to show a reasonable profit, the behavior of all division managers abruptly changed. Soon thereafter, Westinghouse sold out its home appliance business, and changed its entire advertising and sales strategy. For similar reasons, RCA and General Electric chose to get out of the computer business in spite of substantial

investments in this growing field. What seems rational under one set of assumptions appears to be quite irrational under another.

Efficiency and effectiveness responses to environmental pressures

Whetten (1981) has distinguished between two types of responses to environmental pressures. By "efficiency" he means doing as much or more of what the organization has been doing previously but with fewer resources. By "effectiveness" he means establishing a new stable equilibrium with the environment by changing basic strategies, mission, or organizational structure. By analogy with biological organisms, he uses the metaphor "finding a new niche in the changing ecology" to describe the "effectiveness response" to change. The parallel between Whetten's two responses and Argyris' and Schon's two forms of organizational learning is obvious and informative.

Whetten argues convincingly that because of our greater ability to measure efficiency and the difficulty of conclusively settling debates over goals, we often let efficiency become the sole response to an unfriendly environment. Argyris and Schon assert that the tendency to limit organizational learning to single-loop learning is so strong that basically new organizational theories are required even to postulate alternative strategies.

Increasing efficiency always seems rational to members of an organization, even in situations in which it is maladaptive, because it does not demand a change in world view and corporate image. Making large cars more efficiently seemed a rational goal for American automobile manufacturers long after the general public had decided that the rising price of fuel demanded a substantial change in product design. This is an example of a situation in which increased efficiency in achieving traditional goals was not adaptive. Suffice it to say,

the American automobile industry has not yet arrived at an effective adaptation. Since automotive transportation involves many associated activities, both public and private, the situation calls for double-loop learning at the national level to achieve a stable equilibrium for the automobile industry in a rapidly changing environment for all transportation.

This example illustrates a crucial characteristic of organizational behavior: what constitutes rationality in decision-making depends on the basic assumptions as to the nature of the environmental threat. For many members of a threatened organization, who cannot envisage a change in its goals or structure, it may appear irrational to do anything other than to improve efficiency; in fact, as Whetten has observed, there is a strong tendency to make efficiency an end in itself. Only if most members within it believe there is a true crisis is it likely that the traditional internal organizational perspective will be challenged. Under some circumstances the inherent maladaptive character of an efficiency approach may be perceptible only to an outsider - and even then, only when it is too late. What appears to be rational from the inside can be seen from the outside or in retrospect to be quite the opposite.

Among the most intractable barriers to organizational learning are the frequently observed situations in which important problematic issues are undiscussed and undiscussable.⁵ For example, if an executive officer has (or is perceived to have) a commitment to a specified corporate goal, it is highly unlikely that persons lower in the organizational hierarchy will question that goal. It is even more unlikely that they will question long-standing corporate myths or images that have been associated with past success. Thus, even when

serious anomalies are apparent to key members of the organization, circumstances may limit discussions to off-the-record conversations or cause them to be avoided altogether. It goes without saying that if the basic premises of the troubled institution remain unquestioned and undiscussed, it is difficult if not impossible to formulate alternative strategies or even to concede that a problem exists.

The Problem of Retrenchment in Higher Education

We now turn to the problem of retrenchment in education. By hypothesis, retrenchment is a situation characterized by environmental pressures which require the organization to function under conditions of diminishing resources. As expected, the initial response is a search for greater efficiency. And this response often makes sense: a university or college must retain certain norms, goals and structural stability in order to maintain its sense of integrity and purpose. But if the environment undergoes significant changes, single-loop learning will not suffice.

The difficulty in posing the problem of retrenchment arises from the fact that because rationality is always from some perspective, it is impossible to develop absolute criteria as to when to pursue efficiency and when to change course, i.e., when to engage in single-loop and when in double-loop learning. During the period of increase in college enrollment in the 60's and 70's, some departments experienced decline, including most fields of engineering. In retrospect, it was wise for those departments to tighten their belts - increase efficiency - and wait for the better times that lay ahead. The question, then

as now, was whether to see the reduction as a temporary problem or a permanent shift of supply and demand.

In the face of possible reductions in student enrollments due to current demographic changes, some universities have proposed to enlarge the student age group - to attract older students, as happened after World War II. The question now becomes whether such a response - to assimilate older students into structures designed for eighteen-year-olds - is adaptive or maladaptive.

Simply to raise the question as to which kind of organizational response is appropriate - and thus to permit the questioning of basic assumptions - is to appear irrational to many academics committed to those basic assumptions. This then is the problem of retrenchment in higher education: should we view the situation as one for which the only proper response is greater "efficiency" or should we acknowledge that it is a time for double-loop learning - for allowing ourselves to consider the possibility of change in norms, behavior and structure?

Whetten (1980) has called attention to a further paradox. Scarcity of available resources does provide a powerful motivation for some organizational members to consider effectiveness responses; but scarcity also implies that there is less organizational slack (reserves) available for innovation. He points out that there is usually a transition period for organizations, after they have first recognized the symptoms of a changing environment and yet retain some flexibility; i.e., the retrenchment hasn't yet used up existing reserves. At such a time, the critical questions arise: What should the organizations do? Increase efficiency? Seek new effectiveness? Wait until

the symptoms are unmistakable? How should they reasonably decide? These questions invariably accompany the problem of retrenchment.

One of the most respected writers on the subject, Richard M. Cyert (1978), president of Carnegie-Mellon University, has suggested three responses to retrenchment in higher education: first, that universities attempt a variety of ways to increase their resources; second, that they try to improve their reputation and quality with fewer resources - i.e., without changes in structure or mission; third, that they improve internal management. The important point to notice is that these are all efficiency alternatives. That is, Cyert's recommendations are based on the premise that the existing goals and rationality of the university should be the operative ones; in his judgment the situation in 1978 was not bad enough to call for radical accommodative changes.

It would be fair to say that this attitude is still widely shared among university presidents and in the academic community at large (Riesman 1980), even for institutions experiencing sharp budget cuts. For example, the president of the hard-pressed University of Michigan, H. T. Shapiro (1981), asserts that the proper goal for his institution is a "smaller but better university."

Some knowledgeable observers have taken issue with the conventional wisdom. For example, Yarmolinsky (1975), J. Coleman (1973), and Lockwood (1980) have pointed out intrinsic inadequacies of the governance structure of colleges and universities for dealing with budget cutbacks or other problematic issues. Others including Moynihan (1980) and Roy (1981) have perceived inherent contradictions in the mechanisms and rationale for federal support of academic research. And a few writers, Weinberg (1967), Reif (1974), and E. Coleman

(1981), have called for a reexamination or reformulation of the university's central mission.

The retrenchment question thus becomes whether one can call into question not only the ways of doing things but also the objectives, norms and structure of the organization. An important subquestion, given that organizations tend to exclude the discussion of such central premises, is how one can even bring to light the possible alternatives for consideration. If no conclusive criteria can be found to dictate when to pursue efficiency and when to pursue effectiveness, are there organizational learning strategies which will improve the chances of making the right decisions? If the regular organizational channels do not offer mechanisms for the candid discussion of a serious problem, are there other ways to identify and confront the issue?

Case Study - The Research University

Let us now turn to the case of the modern research university, its structural organization, and its responses to retrenchment pressures. An analysis of this particular segment of higher education in the above context will illustrate the themes of single- and double-loop learning and may illuminate both the nature of the present environmental challenges and the responsive behavior of a research university. In particular, we will set forth some dilemmas that are exacerbated at a time of retrenchment.

The modern research university is well-described by observers such as Jencks and Riesman (1968), Kerr (1963), and Perkins (1966). It is an institution that evolved during the growth of both student enrollments and external (especially federal) funding for research. The dominance of the research

mission began after the Second World War and the growth of federal support for research lasted through the mid-sixties. In the early seventies, universities began to feel retrenchment pressures due to several concurrent factors: increasing fiscal constraints in a faltering economy, contracting student populations, and some questioning of the economic value of higher education. Backlash to the anti-war activities of the late sixties may also have been a cause of retrenchment pressures. But despite the levelling off or decline in external support, and growing concerns about internal finances, the dominant image of the comprehensive university has continued unchanged into the 80's.

"The pursuit of excellence," an oft-repeated phrase to describe the overriding mission of the research university, is interpreted by most academics to be the successful search for new knowledge, in the many areas of specialization of the comprehensive university. That is, faculty members of the research university are characterized primarily by their commitment to research, scholarship, publication, and grant-seeking. "Publish or perish" is the slogan which has become a fact of life for faculty in such institutions and even in many colleges and smaller universities.

One fundamental feature of the research university is the power of the disciplines to define academic quality. It has often been observed that chemists at such an institution know more about what goes on at other chemistry departments across the country than they know about what goes on in the physics department next door. Publication in disciplinary journals as an index of quality, peer review of grant proposals, the high faculty mobility attendant to the growth years, and the relative autonomy of professors who can generate

large grants, all contribute to the power of the disciplines. A variety of peer ratings by members of the discipline has come to dominate academic quality judgments (Dolan, 1976).

The department, as the organizational form of the discipline, has thus become the key unit of academic life. Each department is relatively autonomous in selecting its staff, policies, reward structures, and degree requirements. Degrees, for the most part, are associated with departments and students major in this or that department. The independence and strength of departments also contribute to the weakening of a liberal arts ideal. There is little guiding vision of what a liberal education should be; curricula seem aimed at producing mini-disciplinarians. Without an integrative vision, general education requirements are fought out in politicized academic senates where the question "What education is best for the student?" has a lower priority than "What is best for my department?"

Although the departmental structure has offered a powerful mechanism for assuring quality in disciplinary scholarship, freezing intellectual disciplines as they existed at a particular moment in history into the organizational structures of departments has major drawbacks as well. Woe be to the professor (or student) whose interests lie near the periphery of the interests of department x. He or she is not judged to be a "real" x-ologist. Even more importantly, as main-stream intellectual changes occur, departments may be slow to respond, or may fail to respond at all. Taxonomic biology remains enshrined in a number of university departments long after molecular biology has become the dominant intellectual force in the field.

Elizabeth Coleman (1981) puts it well:

There has been no more thorough assault on the wholeness of higher education in regard to the curriculum, faculty members, or students than the triumph of the departmental structure. It is generally agreed that institutions of higher learning are best understood as collections of fundamentally autonomous units rather than in terms of a central authority, or conception of a whole to which they are subordinate. What is less appreciated is how little the definition of departments is connected to any but the most perfunctory treatment of the organization of knowledge. Departments were administrative responses to the dramatic increase in the number of subjects taught - and of the faculty members teaching them. They were administrative devices designed to avoid curricular chaos and to shift power from president to faculty.

When such devices are confused with meaningful divisions of knowledge, the consequences are serious. Education is seen in terms of encountering a collection of subjects organized from the easiest level to the most difficult. Intellectual disciplines and competencies per se are incidental. Rather, for a subject of study to have intellectual legitimacy, there must be a corresponding department. Finally and incredibly, this intellectually arbitrary system of categories has come to be regarded as necessary to maintain a commitment to specialized inquiry, as if intellectual focus, discipline, and scholarship were impossible without departments. Whatever the contribution of departments as we know them to institutional tranquility, they have resulted in astonishing ways of thinking about education and knowledge.

A second fundamental feature of the modern research university is its dependence on federal research funding. The airline flight schedule to Washington occupied as much discussion time as next year's salary increase at a recent University of Illinois conference on research. An interesting feature of the federal research connection is the extent to which academic researchers have succeeded in modeling federal sponsoring agencies such as the National Science Foundation after the university organizational structure. Despite some mission-oriented names of NSF divisions, they are staffed primarily by disciplinarians trained at and oriented to the norms of university departments. Furthermore, the research objectives of NSF and of universities are remarkably similar, which is not surprising given the panels of university scholars who

define the research agenda and select the successful researchers. This symbiosis is an excellent example of the universities' creation of a beneficial environment. It is only recently, with the advent of A-21 regulations and Reagan's budget-cutting, that many faculty members have begun to realize that the federal connection has limitations and pitfalls.

A third feature worthy of note is the role of administrators in the research universities. In contrast to the leadership role strong administrators played in the development of higher education in the early part of the century, it is clear that the role of administration in the modern research university has come to be seen primarily as managerial staff support to prestigious, semi-autonomous, and powerful faculty members. Since World War II the administration has been effectively removed from entrepreneurial and decision-making roles in seeking research grants or developing new research initiatives. Hence, the university administration is limited to a minor role in the very areas in which the institution places its greatest emphasis. Furthermore, the existing governance structure does not permit a strong unifying leadership role to be exercised by central administrators. Integrative leadership is further limited by the incremental approach to internal budgeting, the autonomous role of department heads, and the increasing importance of support from external sources. As a result, the typical administrator is largely preoccupied with managing support services and administrative information systems, dealing with the burgeoning external bureaucracies impinging on higher education, and supervising public relations activities. This leaves little time (or motivation) for understanding the diverse goals, problems and

cultures of one hundred or more departments. The president of a university does preside over the faculty senate and acts as the symbolic leader of the campus, but he or she has little direct influence on either the research or the educational mission. In short, the formal hierarchical organizational chart in a research university clearly fails to represent the nature of power relationships or the locus of authority.

The role of faculty in governance has likewise changed since World War II, from a system of collegial governance through faculty senates set up to gain campuswide consensus on broad issues, to an advisory role largely performed by representative faculty committees managed by and reporting to administrators. However romanticized the current view of earlier faculty senates may be, they did on occasion deal with fundamental issues relating to the nature and purpose of the institution. Today's advisory committees typically give advice on specific issues, such as ways the administration can provide better purchasing or accounting service for research management. Even when a faculty committee is established to advise on a broad campus-wide issue, e.g. program evaluation, it is often rendered ineffective by the insistence that no one from outside a given department can make a valid judgment about that unit. Furthermore, in those cases where external peer evaluation is carried out, administrators are seldom provided much useful information. They may learn as a result of such external advice that their English Department is fifteenth best in the country; however such information gives little guidance on how to compare this department to the fifth best journalism department or how to relate it to the tenth best Spanish department.

Along with the changes in the governance process, in the roles of administration and faculty, in the sponsorship of research, and in the definition of institutional mission, there have also been important changes in the ways the comprehensive research university "keeps score" on departmental performance.

Part of the change is due to sheer size; it is virtually impossible for any one person at any level of authority to be familiar with all programs (or even an appreciable number of them) and to attain an intuitive grasp of their character or potential. It is therefore not surprising that those performance indicators that can be quantified find their way readily into management information systems and the decision-making process. These include such performance measures as access to external funding, ratings by peer groups, and student enrollments (undergraduate student credit hours offer a handy indicator for assessing work load, and hence the size of departmental faculties). Seldom referred to, especially at administrative levels, are the many characteristics of academic life that are difficult to quantify, such as the quality of departmental long-range planning, the commitment to match departmental goals to the larger institutional mission, the intellectual breadth of faculty members, or the tolerance for innovation or unconventional pursuits. These are among the many attributes of professional practices and goals that are left to the individual departments or quietly ignored. Thus the character and mission of the university are in large measure determined by the individual departments, with little sense of overall purpose and limited means for assessing or enhancing performance of the institution as a whole. It is for good reason that the modern research university has often been described as a set of autonomous departments linked together by a common heating plant.

A Model of the Research University⁶

Given the foregoing features of the research university, can we describe its structure and perceived mission in a way that would provide insight about how such an organization is likely to interact with its environment? Alpert has suggested the following:

Let E_u = the excellence of a given university, u .

and E_i = the excellence of a department, i .

$$\text{Then } E_u = \sum_i E_i \quad (1)$$

That is, given the autonomy of departments described above, and given the perceived mission of the university, the excellence of the university is considered by most academics to be the simple linear sum of the excellence of its individual departments.

And what is departmental excellence? The term is so widely used and so seldom questioned in academic circles that a first inclination is to accept it as an intrinsic and self-evident performance measure of the academic enterprise. "Excellence," or its synonym "quality," refers in this context to the caliber of research scholarship, though it also includes an appraisal of research support facilities such as the library, computer services, laboratory equipment, etc. During the past two decades, there has emerged a widely-accepted quantitative measure of quality in the form of periodically published ratings of the various departments. (See Roose and Anderson, 1970; and Dolan, 1976). These ratings are based on the departmental reputation among faculty members

from the same discipline at various institutions. It is readily apparent that such a judgment of quality is highly subjective; it contains not only the personal and unstated biases of the individual assessors, but it also contains the unspoken cultural premises of the discipline as it exists today. By its very nature it relegates to a minor role such other aspects of academic performance as undergraduate education, codifying specialized knowledge, and service to the university or the society. For the moment, we do not wish to dwell further on the implications of the rating process. Suffice it to say, if the goal of the university is excellence, the rating of excellence provides a way of defining the mission of the university.

Several additional points are worth noting. First, the assumption is that an intellectual discipline has pretty well been captured in its departmental organization. Second, the autonomy of the departments and the procedures for rating excellence support the perception that the whole is precisely the sum of its individual parts. Third, there is a pressure in the university to be universal. Thus, if a new discipline emerges, the domain can increase with little opposition; just add another department. Contraction of the domain, however, is another story, as we shall show below.

The excellence of any given department will in turn be some more complicated function of such key parameters as its leadership (L_i), the quality of its faculty (F_i), its size (S_i). That is,

$$E_i = f (L_i, F_i, S_i) \quad (2)$$

Although student demand does not enter directly into judgments of the quality of a department, sheer size does have a bearing on the quality rating. Larger units tend to be rated more highly because they have greater visibility, a greater chance of attracting faculty "stars" in a variety of special fields, and more flexibility in providing resources for them. (The role of changing student demand, whether increasing or decreasing, will be discussed further below). Although leadership is essential to the excellence of a department, by omitting leadership from the university equation, we may seem to imply that leadership is not important at the university level. To some extent this is true, given the dominant role of the departments in staffing, curriculum design, and grantsmanship. But as noted above, central administrators are viewed, and typically view themselves, as facilitators of faculty initiatives, i.e., as performing a staff function for the semi-autonomous departments. In any event, most academics view the contribution of university level leadership as concerned with maximizing E_u , which means, primarily, with giving free rein to strong, independent departments and facilitating their growth. Thus central administrators are seen on this model as supporters of the faculty, not leaders of them. They are in a position to inhibit quality, but they are not perceived as direct contributors to it. Departmental leadership, on the other hand, is perceived as important to quality. Can department heads attract and retain top-notch faculty? Can they move out mediocre faculty? Can they persuade deans to continue providing resources?

To round out this oversimplified model of the research university, we should make explicit reference to the ways in which the quality of the faculty,

F_i , affects and is affected by the financial resources available to the department. To begin with, the financial support is made up of two principal categories:

- (a) "external" support, in the form of grants and contracts awarded by external agencies; and
- (b) "local" support, allocated by internal university procedures and made up of institutional income in the form of tuition, state appropriations, endowment income, etc.

The external support is typically awarded to individual faculty members through the peer review process, in which the quality of the individual researcher is rated by established peers in the discipline. But along with the individual rating there is also an implicit rating of the department to which he or she belongs; a promising young faculty in a prestigious department stands a far better chance to receive an award than would the same person in a second class department. Thus, the ratings of individual researchers and of departments are interdependent.

The distribution of local funds to departments is based on a number of factors, including student demand, curricular requirements, and access to federal funds, as well as the historical role and size of the departmental faculty. Each of these factors is in some way also related to departmental quality, which directly affects the status of the department in the university pecking order. Thus the peer review process has a direct bearing on the allocation of external funds as well as an indirect but significant effect on the allocation of local funds. These in turn affect the teaching loads, salaries,

perquisites, and privileges of the departmental faculty. With such powerful positive feedback in the peer assessment process, it is small wonder that the departmental rating ranks high in the minds of individual faculty members and the individual ratings ranks high in the minds of department heads. For most faculty members, the pursuit of excellence is a departmental activity.

If this model is descriptive of the organizational goals and structure, the "rational" thing to do to increase the excellence of a university is for its administration to increase the excellence of individual departments and, perhaps, to increase the number of departments. This, in turn, would be accomplished by increasing local resources and by favoring the hiring into weak departments of more prestigious faculty whose reputation is established. Although there is motivation to maintain or increase existing strengths, there is no rationale for denying such aspirations for weaker departments and indeed the latter course may be easier and less expensive. The incremental cost of an increase in the excellence of a department already rated in the top five in the country is undoubtedly higher than the cost of a comparable increase in excellence for a department rated below the top thirty. As long as strong departments can also grow, as they did during a period of overall growth, they introduce few political barriers to the growth of other units as well.

And this is what happened during the "golden" years of the 50's and 60's. There was little perceived need for the more prestigious departments to concern themselves with either the quality of other units or the resources allocated to them because there were sufficient resources available, especially in terms of grants and contracts provided by federal sponsors of pure and applied

science. Interestingly, the sponsoring agents (e.g., NSF) were in many cases organized into the same structural pattern as the universities, hence the chemistry department was not adversely affected in terms of external sponsorship when a new academic unit in computer science was formed. Typically, the new unit sought funds from another NSF division or another federal agency. As long as sufficient resources appeared to be available to existing departments, the acquisition of research support was not viewed as a zero-sum game. The model accurately reflects the controlling political situation and serves reasonably well to explain how the university sought to improve its quality status during that period of growth.

But what happened when scarcity set in and retrenchment began? The first indication of retrenchment, in the late 60's and early 70's, was a gradual leveling of external support, especially federal funding. This type of scarcity first caused a significant challenge to the major research institutions in terms of funds available for research facilities: obsolescent laboratory equipment was not replaced; library shortages occurred; etc. More serious problems for the major research universities arose during the 70's as local support, largely enrollment-driven, also began to stabilize and even to contract. As a result, there was a significant decrease in faculty mobility; few institutions were any longer in a position to increase the excellence of a department by bringing in high-priced established "stars". In short, the external support, local support, and the faculty reputation, have become, for most universities, very difficult to enhance or in some cases, even to maintain at previous levels.

"Efficiency Response" to Scarcity

Given the postulated model of the university as the linear sum of its individual parts, what kinds of organizational responses are possible? As might have been expected, the federal reductions of the 70's affected departments quite selectively: some felt the reductions in terms of inadequate funding for equipment, some experienced reductions for fellowships and assistantships for graduate students; some were not affected, due to new federal initiatives. The restrictions on internal funds were imposed more or less across the board; for example, many universities experienced a cutback in such campuswide services as the library, computer research facilities, and maintenance of physical plant, all under the direct control of the central administration. Budgetary restrictions were imposed on departments that had the effect of eliminating slack resources in the form of unfilled salary lines, indirect cost reserves, operating expenses, etc. By and large, each department and campuswide service unit was called upon to respond as best it could under these somewhat randomly imposed restrictions by federal agencies and across-the-board restrictions imposed by the university administration.

In the face of greater competition for federal funds, it was natural for each department to place more emphasis on proposal-writing and grantsmanship; some universities established central campus-wide service units to aid its departments in the identification of funding sources and the preparation of proposals. The natural response to such greater efforts in grantsmanship was for the competing departments at other campuses to do likewise. Thus the net result of this efficiency response was to increase substantially the

percentage of faculty time and administrative effort devoted to writing proposals, whereas the percentage share of the federal dollars available to the top universities remained relatively unchanged. In view of the simultaneous limitations on local funds and the associated reduction in the mobility of established faculty stars, it is not surprising that the levelling off of the overall federal research expenditure was accompanied by a corresponding levelling of the federal funds allocated to the leading individual universities.

When the changing environment of the 70's made it apparent to even the most prestigious departments that federal support would continue to be in short supply, it was natural for them to exert pressures to reallocate local funds. Some of these pressures were exerted by high quality departments in resistance to across-the-board cutbacks, while a new set of pressures for reallocation came from departments with heavy teaching loads generated by shifts in student enrollment, a phenomenon which has assumed a nationwide pattern.

What happens with regard to reallocation of resources in such a situation? With low faculty mobility and limited external funding, reallocation is perceived to be a zero-sum game, and the competition for local funding becomes severe. Let us give an example of this situation by considering the present shift of student enrollment from the humanities and social sciences to engineering, law, business administration and other professional schools. Can we shift resources from the low-demand areas into the professional schools? If we propose to remove salary lines from the Spanish department and add them to the electrical engineering department, here are some of the problems we face:

- Despite a reduction in overall student enrollment, the number of faculty members needed to teach a given Spanish course is about the same as it was before; we cannot release part of an instructor simply because the enrollment for the course is smaller.
- The salaries in the low demand department may be substantially less than those in the high demand department.
- There are no incentives for the low demand departments to reduce their size; tenure is held in departments and there are no mechanisms for transferring to other departments. Furthermore, the concern for quality is perceived by departmental faculty only in terms of the quality of their own departments, and any reduction in size is seen as a diminution thereof.

Under these conditions, the reduction of excellence in the low-demand department would be perceived by that department to be considerably greater than the increase in excellence in the high-demand department; and such a perception is probably quite accurate. What aggravates the situation further is that the faculty in both departments find it hard to consider the situation in terms of the larger campus interest. The linear model accurately portrays a political situation in which a change, proposed in the larger community interest, is perceived solely in terms of departmental self-interest. This seems inevitable if the whole is perceived to be identical to the sum of its individual parts. In the absence of a viable all-campus governance structure there is no choice but for the departments to dig in for a political fight to the finish. Thus, a decision at a higher level to reallocate support often

results in a reduction not only in the quality of the institution but also in the morale of both departments.

Similar considerations apply to the reallocation of resources among institutions. For example, the public institutions in a given state all compete for the same age cohort of traditional undergraduate students and for the same sources of funds. In the face of a declining student-age population, if a major research university is able to maintain its undergraduate enrollments due to its relative attractiveness, some other institutions stand to lose enrollments. Only a significant change in standards, practices, or mission, e.g., an effort to attract non-traditional students, would offset the limits to growth in local support. It goes without saying that limited enrollments also create tensions within each institution between high-demand and low-demand departments.

The tendency to an overall equilibrium of the traditional resource sectors places an extremely heavy emphasis on political considerations at all levels - departmental, institutional, and statewide. The only variables which seem not to approach an equilibrium are student demand for specific programs and the political pressures among competing units. At the level of institutions within a state, the stronger ones experience greater student demand and are at a distinct advantage. As a result, legislators with relatively weak institutions in their districts may well attempt to impose enrollment quotas on stronger institutions, as, for example, has been done in Colorado, to save their "home" institutions. Political maneuvering with relatively fixed resource sectors becomes a fact of life at all institutional levels; reallocation tends to respond to political pressures rather than educational needs.

Another frequently postulated efficiency response to scarce resources is program elimination. If all of the resources from a given department were to be transferred elsewhere, it is postulated, the demoralization would be localized to the affected units while those remaining would be better off because of the released resources. However, there is quite a discrepancy between the simplicity of the prescription and the complexity of the process of program elimination. And the reasons are implicit in the above discussion of the politics of resource reallocation. Dougherty (1979) reports very little financial savings and very little actual program elimination unless institutions dismiss faculty, an action most have been loathe to take.

Program elimination raises interinstitutional political problems as well. It is likely that any program or unit picked out for elimination at a major state university will plausibly claim that there is a similar program elsewhere in the state which is of lower quality and argue that the weaker program ought to be eliminated. That is, following the linear model for a given institution, it seems reasonable to argue that for the system as a whole,

$$E_s = \sum E_{u_j} \quad (3)$$

where E_s = excellence of the higher education system in the state

and E_{u_j} = excellence of the individual universities in the state;

$$\text{then } E_s = \sum_j \sum_i E_{ij} \quad (4)$$

where one sums the excellence of all the departments across the state. Thus, if it is proposed to eliminate a department, why not choose the weakest one in the whole state. Of course, this proposal runs directly into interinstitutional political difficulties - a political confrontation that may well threaten the well-being of all institutions. Such reallocation is not impossible, but it is extremely difficult, and it ignores the question of the integrity of weaker campuses.

Aside from political problems, program elimination raises a logical or conceptual problem. On the linear model there is no readily available rationale or conceptual framework for making the choice as to which program to terminate. In times of growth, the justification for adding programs is the aspiration for universality. If a group of faculty members can plausibly claim to represent a new portion of the intellectual domain, they are in a position logically to justify a new department. Administrators have few problems with this if resources are available and there does not already exist a department claiming the field. However, the autonomy of departments and the accepted rules for defining quality provide no basis for a rational justification of program termination. If departments can be judged only by faculty members of like kind, and if departmental quality is the prime criterion, who is to say which department is lowest on the institutional totem pole?

The absence of a logic for the termination of academic units exposes the inherent limitations of the conventional image of the university. In particular, the widespread notion that departments should be judged only by people in their own disciplines suggests that there does not exist a means by

which a university can make a judgment of and for itself. So strong is the identification of quality with academic unit that the very notion of a quality that transcends a discipline seems difficult, if not impossible, for academics to grasp. As a result, the faculty lacks the commitment, the knowledge, or the authority to deal with problems outside their own departments. Nor is such knowledge or commitment to be found in the administration - made up, for the most part, of faculty members who spent most of their careers in a single discipline. Administrators have neither the motivation for articulating an integrated vision of the university nor the organizational mechanisms for implementing long range institutional plans. Nor do they have sufficient knowledge of the internal situation within departments to make informed decisions on matters of priority at that level. Thus, when it comes to a decision of the magnitude of terminating a department or restructuring a school, few administrators feel they have either the authority or the understanding to make the decision. They do not claim the wisdom to justify seeking the requisite authority nor do they claim the authority to justify seeking the requisite understanding.

The Limitations of Organizational Responses

These observations illuminate some of the intrinsic organizational weaknesses of the university - as vividly portrayed by the linear model:

- The model exposes the limitations of our definitions and measures of quality - measures which do not transcend the departments and therefore tend to ignore the well-being and the purposes of the larger institution.

- ° The model makes it clear why the faculty governance system (e.g., the faculty senate) is ineffective; with power vested largely in autonomous departments, the senate seems to have all of the inertia and intransigence of the UN General Council.
- ° The model suggests why many of the dissonances between stated institutional goals and institutional performance are undiscussed or undiscussable; the internal stakeholders are so preoccupied with individual or departmental well-being as to see little pay-off in such discourse.
- ° The omission of the administration from the linear model calls attention to the reality that the published organization chart (a hierarchical structure of chancellors, deans, department heads, etc.) is in large measure a symbolic representation from the past. The reality is an administrative staff acting as institutional spokesmen, handling fund-raising and budget preparation, supervising a variety of campuswide support services and staff functions, but having little discretionary authority or flexibility.

Despite its lack of completeness, the linear model provides insights into the structure and image of the university as perceived by its members, and makes plausible the kinds of highly competitive, self-centered behavior of the individual faculty members and departments. Given the perceived image, that behavior is rational. It is our contention that if this image and structure is retained under conditions of scarcity, the university is extremely

limited in its range of responses. Whether the organization will continue in its search for "efficiency" responses (i.e., to maintain its current norms, mission, and structure) or whether it will turn to "effectiveness" as a goal depends on its capacity for accepting change in these basic premises, that is, its capacity for "double-loop" learning. To provide some insights as to where such learning might lead, we set forth some possible alternatives below.

Some Alternatives to the Simple Linear Model

What sorts of accommodative changes in mission, structure, or norms would be responsive to retrenchment? One possibility is to acknowledge that the simplistic definition of departmental excellence should be weighted in some way by its service to society, for example, by the demand for its graduates. The point here is not merely that the indicator of excellence of a department would be affected indirectly through changes of student enrollment; that point is already reflected in the existing model. Rather, the relative student demand among programs could be used as an explicit weighting of excellence. For example, the formula could be changed to look something like the following:

$$E_u = \sum w_i E_i; \quad (5)$$

$$w_i = \frac{S_i}{S_{av}}; \text{ a weighting function dependent on}$$

$$S_i = \text{student demand (appropriately defined) for department } i,$$

$$\text{and } S_{av} = \text{average student demand.}$$

This modified excellence equation would represent an explicit change from the existing image or norms. Furthermore, it would provide a rationale for cutting back on an academic unit with high quality but low student demand. To implement such an action would, of course, require either a broad acceptance by faculty members of the new definition of excellence, or the allocation of greater authority to the campus administration, or both.

There are other alternatives for effective response. The claim is often made that although student demand is important and should influence reallocation to some extent, it should not be the final arbiter. One would not have a university, so the argument runs, without a classics department. This view amounts to urging yet a further accommodation, perhaps including a concern for the contribution of the department to other departments or to the overall campus mission - let us call this "centrality."

In this case we might adjust local support A_i , as follows:

$$A_i = K_i + h(S_i, P_i) \quad (6)$$

where $K_i = m(C_i)$, and

C_i = some measure of the centrality of department i .

P_i = a measure of the political standing of the department.

K_i is, thus, some minimal core level of local support which would be maintained regardless of student demand, S_i . That is, while one might cut support for the unit to K_i because of declining student demand, it would not be eliminated altogether.

Centrality might be defined in a variety of ways. One could simply let student demand serve as proxy for centrality as noted above. Alternatively, centrality could be measured against some historical, empirical organizational imperatives which all, or most, universities have recognized. Yet another way would be to compare the unit to some a priori ideal of a university. An alternative measurement, sometimes called "criticality" in the organizational behavior literature, would involve the number of other units which a given unit serves. Mathematics, for example, would be highly critical unless other units were allowed to develop their own mathematics courses. Any of these conceptions of centrality might be used as a way of modifying the linear model.

There are other, more radical, possibilities for achieving effectiveness. Following the lead of industry, one might urge that a university with varying degrees of excellence of its parts might further decouple the parts. One might establish the colleges as quite autonomous in setting admissions standards, tuition, salary and promotion procedures, etc. One might even propose establishing a college of engineering as completely independent of its former university home. It may be noted that some research institutes which had their roots in universities (e.g., SRI, the former Stanford Research Institute) have already been decoupled. This sort of move would remove even the weak additive links among the relatively independent departments of a university.

In proposing another alternative, Sir Brian Pippard, F.R.S., Cavendish Professor of Physics at Cambridge, recently predicted (1980) that the research emphasis in Anglo-American universities, at least as we have known it, will prove to be maladaptive during the next quarter of a century. He urged not

an abandonment but a de-emphasis of research and a revitalization of the educational function of universities. Still another alternative would be a renewed emphasis on public service by universities, especially public institutions. Another direction would be to recognize and alleviate the growing tension between the implicit intellectual organization of the disciplines and the, perhaps by now, maladaptive organizational embodiment of disciplines in departments. Perhaps universities could play a more "integrative" role in our society (see, for example, Cleveland, 1981). A reorganization or redefinition of mission at levels such as these would clearly involve a change in the linear model of excellence currently in operation and would probably call for coupling departments in a variety of new interdependent loops. Any such changes would have to involve changes in the governance structure, in the role of administrative officers, and in the approach to performance evaluation. It goes without saying that such changes would call for double-loop organizational learning to redefine the institutional mission and to gain acceptance at various levels of the university.

In summary, if attempts to deal with a changing environment by conventional (efficiency) responses do not prove adaptive, then only a change of image, mission, or structure can make alternative kinds of behavior appear rational. If the assumptions that underly the linear model are retained under times of scarcity, the university system is driven toward increasing efficiency within the capacity of the individual departments, and the capacity for changing the internal environment is limited to what individual departments find it possible to carry out with greatly diminished resources. What changes in the assumptions

of the linear model are appropriate and how to decide on and implement them if they are necessary is another formulation of the problem of retrenchment.

Some Conclusions and Conjectures about Dealing with Retrenchment

In many ways this paper is merely a prolegomenon to dealing with the problem of scarcity of resources in institutions of higher education. What we have done is to focus on the organizational structure of universities and how it reflects the images, values, and beliefs of its members. We have argued that an organization's response to environmental pressures depends in a critical way on the perceived mission and accepted norms of the organization and whether these are also subject to reappraisal and change. If these arguments are valid, there are a number of significant consequences for universities with regard to long range planning, the role of administrative leadership in the organizational learning process, and the settings in which such learning can take place.

If explicit planning for the future is done solely in terms of present images and structures, the planning may or may not be appropriate. Clearly, if all that is needed is greater efficiency then single-loop learning is both feasible and adequate. However, in some situations, the notion that one can use existing images and norms to engage in rational planning is itself an illusion. In particular, since the validity of any plan depends on a given set of images, values, and beliefs, planning will obviously not be useful in just those cases in which the adaptive course of action requires changing those basic premises.

This is not to deny that there is a larger context within which one can rationally discuss both single- and double-loop learning; we have tried to do just that in this paper. The grounds of rationality from this perspective involve a reflective equilibrium between organizational behavior and organizational mission as reflected in the organizational structure. What follows from the conception of rationality as adaptiveness is that the rational course of action will always be context dependent and hence plans should always be susceptible to modification or abandonment. Rationality in this view consists of monitoring the current situation rather than following some set of established "rational" decision rules.

We have avoided any explicit prescription as to when single- or double-loop learning may be preferable for responding to environmental pressures. Yet merely by raising the question and highlighting some dilemmas currently faced by research universities, we have implicitly made a case for encouraging double-loop learning - for seriously considering alternatives to the business-as-usual efficiency response to retrenchment. It is our premise that if we could engage in double-loop learning, that is to say, to be in a position to consider various alternatives, it would not imply change for the sake of change. Rather, such consideration of alternatives might avoid the hurried and unreflective reaction to crisis that has afflicted a number of institutions in the recent past.

What is the role of administrative and intellectual leaders in the organizational learning process? We have called attention to the limited influence that the university president has on the institution's research or educational

missions. And we have commented on the protection of its outstanding scientists and scholars from the day-to-day problems of institutional management and governance. Yet the embodiment of the images, values, and beliefs of a university is to be found in its administrators and intellectual leaders. For most purposes, the socialization of its administrators is so complete and the selection processes so imbued with existing values that the university is almost guaranteed to appoint as the top administrator a person who sees no need for change. Thus, it appears even to sophisticated observers that it doesn't make any difference who is selected president (March 1980).

It may be that this situation is altered at a time of crisis: if a change of the administration takes place when the institution perceives itself in crisis, there may be a higher likelihood that the new administrator could make a real difference and that there would be more choice among possible candidates. That is to say, there may be more willingness by the faculty in times of crisis to accept as an administrator a person whose vision varies enough from the prevailing images to enable him or her to initiate double-loop organizational learning. The new president might then act as a source of variant images as well as a catalyst for a learning process. Despite the widely prevalent assumption that an institution in trouble needs a "strong leader",⁷ it is far less likely that he or she would be in a position to impose such variant images from the top down. The present organizational structure does not offer the president this option. Furthermore, it seems highly questionable that new visions of the university can be adopted solely through actions or exhortations by the president, no matter how strong a personality or persuasive a public figure he or she may be.

The new visions must also capture the imagination and the commitment of the faculty; and they must make sense to clients and sponsors as well. This is highly unlikely without the deep involvement of the intellectual leaders of the campus as well as a significant recasting of the governance structure.

The ultimate test of an institution's responses to retrenchment is the achievement of equilibrium between its functional activities and the external environment. This implies compatibility between the activities and the belief systems of its members. When such equilibrium exists, single-loop learning is sufficient to handle the day-to-day challenges faced by the organization. However, when an institution is faced with dilemmas and problems that are exacerbated as the normal single-loop responses are intensified, double-loop learning becomes the only acceptable alternative for survival. Environmental change thus places a requirement for adaptability not only in terms of institutional use of available resources but also in terms of capacity for adjusting its norms, images, and mission to the new situation. The widespread and encompassing environmental changes of the past decade have made new demands for organizational learning not only on universities but on virtually all other major institutions in both private and public sectors.

We have not attempted in this paper to present specific techniques for initiating or supporting double-loop organizational learning. One approach is to identify some minimal resources to support innovative, even if radical, experiments, where by radical we mean experimental activities and studies which literally appear irrational from the point of view of the currently accepted image of the university. Cohen and March (1974) have referred to

such experiments as "playful foolishness". Though many of them may not prove fruitful in the short term, some experiments may nevertheless provide the variant images and goals that would prove useful at some future date. If this perspective is accepted, such pockets of experimentation should be protected, precisely during times when the pressures to cut back on the frills become enormous. Furthermore, it seems desirable to encourage such experimentation at all levels.

An interesting variety of intervention techniques has been tried out in various institutional settings to help organizations bring basic images and beliefs to the surface and examine them critically [see, for example, Mitroff and Emshoff (1979); Boland (1980); and Huff (1980)]. The challenges to adopting such techniques in the university setting are formidable: Who would have the authority to initiate the intervention? Who would participate? Where would such activities take place? The fact that there are no obvious answers to these questions suggests the need for invention - for creating new settings for the organizational learning processes. The seminar series which provided the setting for this inquiry into retrenchment had as its central metaphor the creation of a "safe place" in which regular participants and visitors alike could speak openly and candidly about their perceptions, their concerns and their beliefs. For the participating faculty and administrators, this setting proved effective in illuminating the problems and encouraging candid discussion of many of them among persons who would otherwise not have had an opportunity even to exchange views. But these very same discussions also revealed the dimensions of the barriers to organizational learning; it remains an unmet

challenge to create settings in which such learning can involve critical numbers of the academic staff.

While we have dwelt heavily on the barriers to organizational learning, there are several features of the present academic scene that are promising, both for gaining further understanding and for developing valid approaches to the problems of retrenchment. First, there is a widespread appreciation of the historical continuity of the university - however implicit and inchoate the awareness may be. This manifests itself in the feelings previously referred to concerning the centrality of certain disciplines. This sense of history could in principle be made more explicit and used to help the institution understand and recreate its mission in a changing environment. Second, for all the recent emphasis on research in specialized fields, there is a growing recognition that research universities, as contrasted with research laboratories, are also charged with education - not only the education of future scientists and research scholars, but also the education of citizens for living in a rapidly changing world. This realization may provide the motivation for a new and more adequate image of the university. Finally there seems to be a prevailing mood among the faculty for increasing collegiality across departmental lines. At our university, a series of fifteen informal get-togethers with the chancellor, involving serious discussions of institutional problems among faculty and administrators from various disciplines has been enormously successful. Whether measured in terms of greater awareness of other perspectives or in terms of a stronger sense of belonging to a community, these sessions have proved their worth. They have provided an opening wedge in exploring common presuppositions among

the various disciplines and professional schools. How to mobilize the interests and energies thus released remains an issue for future exploration.

By experimenting with new settings for the discussion of these issues, and by exploring the utility of various interventions, it may be possible to engage the efforts of the various institutional stakeholders precisely on the problem of retrenchment, namely, whether to use single- or double-loop learning, whether to seek efficiency or effectiveness.

NOTES

(edited for blind review)

1. This essay is an outcome of a seminar series on "Creative Responses to Retrenchment." While some of the ideas in this paper can be and are attributed to specific individuals - either regular or invited participants - many more ideas have emerged from group discussion and debate and cannot be identified with an individual. In other words, by now many of the group's insights have become ours and vice versa. Other essays emerging from this group effort will address further the characteristics of organizational behavior under conditions of scarcity and will consider alternative approaches to organizational learning.
2. It will quickly become apparent that neither the term "problem" nor the term "solution" is appropriate for describing the complex process of organizational adaptation to a changing environment.
3. (deleted)
4. Whetten (1980) has reviewed the literature of organizational decline and called attention to many similarities among widely differing organizations in the responses to retrenchment.
5. See Argyris and Schon (1978) for examples of undiscussable barriers to organizational learning, pp. 35, 38, 46-85.

Retrenchment
Notes

6. In the course of our inquiry, we have considered a variety of models that might help to understand why universities behave the way they do. We have used the University of [] as a case study, to test our conclusions and conjectures in a context of more or less shared experience; this study included an extensive series of interviews with faculty members and administrators at various levels of responsibility.

Our major source of immediate experience is, of course, with the University of []. We are led to believe, however, from our many contacts with other institutions and with the literature that this university has more features in common with other major research universities than it has differences. The ultimate test of generalizability, however, will have to rest with the individual reader.

7. An unusually high number of the invited participants to our retrenchment seminar, both faculty members and administrators, espoused the desirability of or need for a "strong leader" to deal with perceived needs for change.

Retrenchment

NOTES

1. This essay is an outcome of a seminar series on "Creative Responses to Retrenchment" that was carried out at the Center for Advanced Study at the University of Illinois at Urbana-Champaign during 1981. Regular members (and their departmental affiliations) of this ongoing interdisciplinary inquiry were David A. Whetten (Business Administration), who initiated the effort, and Stuart Albert (Business Administration), Daniel Alpert (Physics), Richard Boland (Accountancy), Fred Coombs (Educational Policy Studies), and Hugh Petrie (Philosophy of Education). While some of the ideas in this paper can be and are attributed to specific individuals - either regular or invited participants - many more ideas have emerged from group discussion and debate and cannot be identified with an individual. In other words, by now many of the group's insights have become ours and vice versa. Other essays emerging from this group effort will address further the characteristics of organizational behavior under conditions of scarcity and will consider alternative approaches to organizational learning.
2. It will quickly become apparent that neither the term "problem" nor the term "solution" is appropriate for describing the complex process of organizational adaptation to a changing environment.
3. James Carey, a participant in one of our seminar-workshops, is Dean of the College of Communications at the University of Illinois at Urbana-Champaign.

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